



**PARISH PRIORITY ECOSYSTEM RESTORATION PROJECTS**



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Though not an endorsement of any project under this study effort, Parish Priority Projects that would be provided by the Parishes to the State for consideration as deemed necessary by the Coastal Master Plan for Louisiana are included in this Appendix only as a reference for future planning under other study authorities.



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**CALCASIEU PARISH PRIORITY ECOSYSTEM RESTORATION PROJECTS**



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Calcasieu Parish's priority project is the Rabbit Island Project and then the entire Cameron Parish Project list at this time. Calcasieu Parish believes that protecting Cameron Parish will protect Calcasieu Parish. Calcasieu Parish anticipates updating their coastal plan which will include a priority projects list. Those projects will be viable projects for consideration of funding for protecting Lake Charles to the 500-year level of protection as deemed necessary by the Coastal Master Plan for Louisiana (anticipated to be updated in 2017).



## Rabbit Island Restoration Project

### Purpose

The purpose is to provide improved habitat for nesting birds on this important established rookery. Rabbit Island is the westernmost nesting ground in Louisiana for brown pelicans. The island has historically been a rookery for a large number of pelicans and colonial birds.

### Funding and Participants

The project is funded by the Coastal Impact and Assistance Program (CIAP), part of the Energy Act of 2005. Environmental, engineering and design, and construction of the project will be completed in 2014. Participants include:

- Louisiana Department of Natural Resources, Office of Coastal Protection
- Calcasieu Parish Police Jury
- Cameron Parish Police Jury
- Louisiana Department of Wildlife and Fisheries (LDWF)
- US Army Corps of Engineers, New Orleans District (USACE)
- Port of Lake Charles
- Port of Cameron

### Rabbit Island Description

Rabbit Island is centrally located along the Chenier Plain in Calcasieu Lake between Grand and Sabine Lakes. Specifically, it is situated in the southwest portion of Calcasieu Lake, in West Cove, approximately 1 mile from the southern shore of the lake. Calcasieu River, the tidal pass that historically was the natural drainage for the lake, and the Calcasieu Ship Channel are located approximately 2 miles to the southeast of Rabbit Island.

The island is approximately 220 acres in size. Much of the island at or below sea level, with its highest point reaching approximately 2 feet above sea level.

Tidal channels, and open ponds dissect the interior portion of Rabbit Island and fully cover approximately ½ of the island. There is only 1 main channel located in the southeast quarter of the island that feeds the 3 interior ponds, 2 of which are north and 1 south of the main channel. At its mouth the channel is approximately 2 feet deep but in the interior portions of the island the channel narrows and deepens to approximately 4 feet deep. The 2 ponds north of the main channel are approximately 1 ½ feet deep. The eastern pond on the north side has only a narrow rim, approximately 20 feet wide protecting the pond from the open waters of West Cove. The pond on the south side of the main channel is less well defined and shallower than the northern ponds. The edges of the south pond are formed by broken, deteriorating marsh.

### Rabbit Island Restoration

In 2003 it was observed that there were 8 nests of pelicans on Rabbit Island that resulted in 5 young birds. In 2010, 500 nests produced over 1,000 young. Over 100 rehabilitated pelicans impacted by the Deepwater Horizon Incident have been relocated to Rabbit Island. Daily morning monitoring of the status of these rehabilitated birds indicate that 1,000 to 3,000 pelicans are using the island for refuge. Thousands of shoreline and colonial birds also benefit from the refuge and habitat provided by Rabbit Island.

During recent times, it has been observed that nests on Rabbit Island frequently fail from flooding by tides and waves. Higher tidal amplitudes from larger volumes of water coming up the Calcasieu Ship Channel are a primary cause for the more frequent flooding on Rabbit Island. Part of the flooding is also due to larger wind-generated waves caused by increased fetch as more marsh is lost along the fringe of West Cove. The low elevation and lack of shrubbery on the island causes pelicans to nest on the ground and periodic high water drowns the nests, resulting in failed breeding attempts.

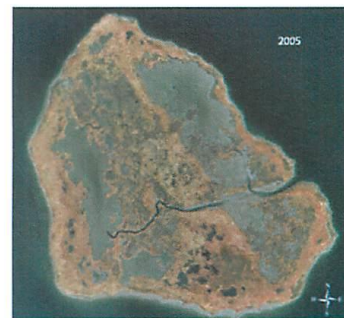
By using dredged spoil from the Calcasieu Ship Channel, elevations on the island can be raised and the topography can be sculpted to enhance the nesting areas and build a world class rookery for colonial birds and the brown pelican. Restoration of the island adds an important dimension to the resources of the Calcasieu Lake, helps



Representatives from the Calcasieu Parish Police Jury, LDWF, the Coastal Conservation Association, Livingston Engineers, and Tetra Tech arrive on the north shore of Rabbit Island for a site reconnaissance. David Richard of Stream Properties, originator of the Rabbit Island Restoration project, provides information to the team.



**Top:** Rehabilitated pelicans impacted by the oil spill from the Horizon Deepwater Incident are released at Rabbit Island by LDWF representatives. **Bottom:** An estimated 1,500 pelicans are currently using the island for refuge right now.



2005 aerial photograph of Rabbit Island Note in 2005 photograph the extent of interior ponds; the ponds are fed by a shallow channel approximately 100 feet wide; the channel mouth is located on the southeastern quarter of the island.





broaden the range of nesting areas for the brown pelican, and is an excellent example of the beneficial use of dredged material. With many barrier island nesting grounds under attack due to coastal erosion and environmental impacts, the Rabbit Island rookery will be even more important. Distant from human disturbance and potential predators, the island will provide a quiet respite for the once-endangered birds.

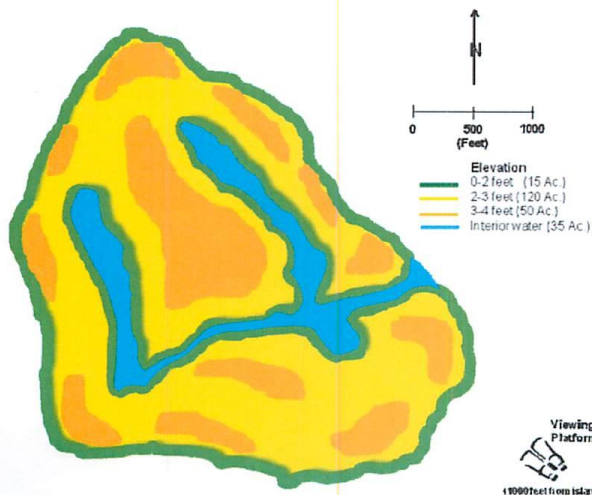
Rabbit Island Restoration will be based upon the guidance provided by Visser (2005) and in consultation with LDWF. Features will include: nearness to open water; separation from the mainland; approximately 20% of nesting area with dune/shrub habitat; and a wide beach for loafing habitat. Additionally it is proposed that a viewing platform located a minimum of 1000 feet from the island be constructed to provide viewing access of the rookery without disturbing the nesting colonies.

The topography of the island will be elevated and contoured to include those features critical to successful nesting of pelican and colonial birds. This habitat will add an important dimension to the resources of the lake, and will help to broaden the range of nesting areas for the brown pelican. When the restoration is complete, Rabbit Island will be not only the western-most rookery but also the premier rookery for the brown pelican in the state of Louisiana, adding significant habitat for the pelican and other colonial birds and helping to preserve these valuable resources.

Currently, environmental and survey work are being performed. A topographic survey of the island will determine the quantity of fill required to restore the island for ideal nesting conditions. A side-scan-sonar survey between the island and the Calcasieu Ship Channel will be performed to determine the best route for a dredge pipeline and small barge access to minimize impact oyster reefs and seed grounds which are bountiful in West Cove.

It is estimated that between 1 to 1 ½ million cubic yards of material will be required to elevate the topography of Rabbit Island to the conceptual design's specification. The engineering design and a bid package for construction will be completed and delivered to the USACE by September 2011. Rabbit Island restoration is an excellent example of the positive impact of beneficial use of dredged material.

Total estimated costs for Rabbit Island restoration are approximately \$6 to \$7 million. Currently, the CIAP funds have \$2 million dedicated to the project. Considering the importance of this rookery in preserving a diversity of habitat for pelicans and migratory colonial birds in Louisiana, the disappearance of rookeries due to land loss particularly in southeast Louisiana, impacts to rookeries from natural disasters such as hurricanes and manmade disasters such as the Horizon Deepwater Incident, and for other reasons to build and preserve our natural resources in Louisiana, it is critical that additional funds be obtained to complete the Rabbit Island Restoration project.



Conceptual Design of Rabbit Island based upon recommendations from LDWF



Interior Channel



Interior Pond



Narrow Rim of Interior Pond



High tides and waves coupled with the low topography of Rabbit Island is a constant threat to the rookery. Increasing the elevation and incorporating features that are known to enhance successful hatchings will help diversify the habitat available to the shoreline birds and brown pelicans.



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**CAMERON PARISH PRIORITY ECOSYSTEM RESTORATION PROJECTS**



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CAMERON PARISH POLICE JURY



# Cameron Parish Master Plan

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Coastal Restoration & Protection Project Development

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Cameron Parish is the Louisiana Parish with the most land area. The parish has a total area of 1,932 square miles, of which, 1,313 square miles of it is land and 619 square miles of it is water. The Cameron Parish Police Jury has realized the undeniable connection between its citizenry and the land on which those individuals work, play, worship, and live. In that vein, the Police Jury has compiled this submission to assist in the further protection and restoration of this area's marshes, cheniers, and bayous.

Through the merits of this proposal, the Cameron Parish Police Jury is intending to identify, develop, and implement coastal restoration and protection processes and projects for Cameron Parish. With the assistance of the Parish's Coastal Restoration Committee (CRC), Cameron Parish has positioned itself to become proactive in the battle against the degradation and eventual loss of the Parish's once thriving wetland habitat, marshes, and cheniers. This Committee has a diverse collection of individuals that provided a holistic purview of the interests and concerns of the many stakeholders in the future of Cameron Parish. This Committee is made up of Parish local elected officials, State elected officials, gravity drainage district members, landowners, State & Federal agencies, engineers, and wetland scientists.

Scientific data and historical trends have been discussed at length by local residents, elected officials, and State & Federal agencies. In this proposal, the CRC attempts to enumerate specific goals in which the main facet will be the development and implementation of a common-sense approach to the realization and eventual construction of these coastal restoration and protection measures for Cameron Parish.

The project area for this Comprehensive Plan is the entirety of Cameron Parish. The value of this proposal as it pertains to the well-being of the variety of ecological and physical land areas of this Parish cannot be understated.

Louisiana's Comprehensive Master Plan for a Sustainable Coast (effective May 2012) included projects located in Cameron Parish. Generally speaking, the overwhelming types of construction project for the Parish are hydrologic restoration and marsh creation. According to the Master Plan, of the thirty-five (35) projects listed with seven (7) different project types under the 1st Implementation Period (2012-2032), nineteen (19) were either hydrologic restoration or marsh creation projects (54%). The breakdown of other project types for the Parish is as follows: Bank Stabilization (5), Ridge Restoration (4), and Shoreline Protection (6).

As a result of the project development efforts of the drainage boards, landowners, and Parish engineer, the following types of projects were proposed for inclusion in the plan:

- Beneficial Use/Marsh Creation (17)
- Canal Maintenance (75)
- Hydrologic Restoration (150)





- Oyster Reef Preservation (2)
- Shoreline Protection/Embankment Maintenance (9)

The dominant feature of the proposed projects is hydrologic restoration based projects which constitute 59% of all projects listed, followed by: canal maintenance projects at 30%, beneficial use/marsh creation projects at 7%, shoreline/embankment maintenance projects at 4%, and oyster reef preservation projects at 1%.

As with the previous list of projects, the projects proposed by the sub-committee have a varying current status from the conceptual stage to some projects that have been constructed but now need repair and maintenance on either a water control structure or existing drainage laterals. One nuance to the list developed by the sub-committee that clearly expounded the previous list was the new classification of “canal maintenance”. Canal maintenance will include dredging existing canals, improvements to damaged spoil banks, and removal of all debris and foreign matter from the canals. This will allow for increased control of efficiently managing water levels in the Parish’s marshes.

The 2012 State Master Plan omitted several viable projects for a variety of reasons. At a minimum, those projects should be included in the Master Plan, even if only noted in an appendix. If not, potential projects and planning efforts for coastal restoration initiatives in Cameron Parish could be discarded from consideration for future funding sources.

The Coastal Restoration Committee felt that the more feasible solution would be for the Parish to submit its projects as one, comprehensive effort. The modeling efforts referenced in several meetings since the inception of the 2012 State Master Plan was stated to be the technical justification for the approval or dismissal of projects. It is our intent through this proposal to have our projects looked at in a holistic way to determine the impacts of each facet of the project on the Parish. The Parish does not have the capacity or expertise to analyze the data to determine those ideal project types/ areas that would be sufficient to the CPRA’s standards. Therefore, it is our hope that the results of the modeling efforts will be provided to the Parish for comment prior to the finalization of the 2017 State Master Plan in order for the Parish to develop a more thorough path forward in implementing Coastal Restoration & Protection projects in Cameron Parish.



HYDROLOGIC RESTORATION						CANAL MAINTENANCE	
1	LIGHT HOUSE BAYOU STRUCTURE	65	GD4-29	129	GD5-19	11	GD08 LATERAL 6
2	SABINE PASS CONSTRUCTION STRUCTURE	66	GD4-30	130	GD5-20	12	GD08 LATERAL 8
3	JOHNSON'S BAYOU SALINITY CONTROL STRUCTURE	67	GD4-31	131	GD5-21	13	GD08 LATERAL 8A
4	DEEP BAYOU SALINITY CONTROL STRUCTURE	68	GD4B-2	132	GD5-22	14	GD08 LATERAL 9
5	SHALLOW PRONG STRUCTURE MAINTENANCE	69	GD4-32	133	GD5-23	15	GD08 LATERAL 9A
6	DRAINAGE DIST. 7 STRUCTURE MAINTENANCE ALONG HAMILTON LAKE	70	GD4-33	134	GD5-24	16	GD08 LATERAL 10
7	SABINE LAKE HYDROLOGICAL RESTORATION	71	GD4-34	135	GD5-25	17	GD08 LATERAL 11
8	RIGHT PRONG STRUCTURE	72	GD4-35	136	GD5-26	18	GD08 LATERAL 12
9	BLACK BAYOU STRUCTURE	73	GD4-37 & 38	137	GD5-27	19	GD08 LATERAL 12A
10	CS-22, 24, 27 HYDROLOGIC RESTORATION	74	GD4-36	138	GD5-28	20	GD08 LATERAL 13
11	SALT DITCH STRUCTURE	75	GD4-39	139	GD5-29	21	GD08 LATERAL 14
12	BROWN'S LAKE STRUCTURE	76	GD4-40	140	GD5-30	22	GD08 LATERAL 15
13	WEST COVE STRUCTURE ON SNWR	77	GD4-41	141	GD5-31	23	GD08 LATERAL 16
14	HIGHWAY 27 BACKFLOW STRUCTURE	78	GD4-42	142	GD5-32	24	GD08 LATERAL 17
15	FIRST BAYOU STRUCTURE	79	GD4-43	143	GD5-33	25	GD08 LATERAL 17A
16	DRAINAGE DIST. 7 STRUCTURE MAINTENANCE FROM HB TO CAMERON	80	GD4-44	144	GD5-34	26	GD08 LATERAL 18
17	NO NAME STRUCTURE MAINTENANCE	81	GD4-45	145	GD5-35	27	GD08 LATERAL 18A
18	NO NAME BAYOU HYDROLOGIC RESTORATION WEIR	82	GD4-46	146	GD5-36	28	GD08 LATERAL 19
19	LAMBERT SOUTH STRUCTURE HYDROLOGIC RESTORATION	83	GD4-47	147	GD5-37	29	GD08 LATERAL 19A
20	LAMBERT STRUCTURE MAINTENANCE	84	GD4-48	148	GD5-38	30	GD08 LATERAL 19B
21	LAMBERT NORTH STRUCTURE HYDROLOGIC RESTORATION	85	GD4-49	149	MERMINTAU RIVER RESTRICTION STRUCTURE	31	GD08 LATERAL 19B1
22	GRAND BAYOU SOUTH STRUCTURE HYDROLOGIC RESTORATION	86	GD4-50	150	HOG BAYOU SALINITY CONTROL STRUCTURE	32	GD08 LATERAL 19B2
23	GRAND BAYOU STRUCTURE MAINTENANCE	87	GD4B-3		BENEFICIAL USE/MARSH CREATION	33	GD08 LATERAL 19C
24	GRAND BAYOU NORTH STRUCTURE HYDROLOGIC RESTORATION	88	GD4-51	1	BENEFICIAL USE OF DREDGE MATERIAL FROM THE SABINE RIVER	34	GD08 LATERAL 20
25	MANGROVE SOUTH STRUCTURE HYDROLOGIC RESTORATION	89	GD4-52	2	CS-66 BENEFICIAL USE IMPLEMENTATION	35	GD08 LATERAL 20B
26	MANGROVE BAYOU STRUCTURE MAINTENANCE	90	GD4-53	3	DOUBLE ISLAND BENEFICIAL USE IMPLEMENTATION	36	GD08 LATERAL 20C
27	MANGROVE NORTH STRUCTURE HYDROLOGIC RESTORATION	91	GD4-54	4	GREENS LAKE BENEFICIAL USE IMPLEMENTATION	37	GD08 LATERAL 20D
28	PECONI SOUTH STRUCTURE HYDROLOGIC RESTORATION	92	GD4-55	5	BLACK LAKE BENEFICIAL USE IMPLEMENTATION AND TERRACING	38	GD08 LATERAL 20D1
29	PECONI BAYOU STRUCTURE MAINTENANCE	93	GD4-56	6	BROWN LAKE BENEFICIAL USE IMPLEMENTATION	39	GD08 LATERAL 20D2
30	GUILLOTINE GATE MAINTENANCE	94	GD4-57	7	WILD COW LAKE BENEFICIAL USE IMPLEMENTATION	40	GD08 LATERAL 20D3
31	SWEET LAKE SOUTH IMPOUNDMENT STRUCTURES	95	GD4-58	8	MUD LAKE BENEFICIAL USE IMPLEMENTATION	41	GD08 LATERAL 20D3A
32	CAMERON-CREOLE WATERSHED BORROW CANAL PLUG	96	GD4-59	9	BENEFICIAL USE OF DREDGE MATERIAL FROM THE CALCASIEU RIVER	42	GD08 LATERAL 20E
33	AMOCO DITCH STRUCTURE MAINTENANCE	97	GD4-60	10	MCCALL MARSH CREATION	43	GD08 LATERAL 21
34	COMISARY POINT DRAINAGE STRUCTURE MAINTENANCE	98	GD4-61 & 62	11	CAMERON PRAIRIE MARSH CREATION	44	GD08 LATERAL 22
35	SOUTH HEBERT LANDING STRUCTURE MAINTENANCE	99	GD4-63	12	CAMERON CREOLE WATERSHED MARSH CREATION	45	GD08 LATERAL 23
36	GD4-1	100	GD4-64	13	SOUTH GRAND CHENIER MARSH CREATION	46	GD08 LATERAL 24
37	GD4-2	101	GD4-65	14	MILLER MARSH CREATION	47	GD08 LATERAL 26
38	GD4-3	102	GD4-66	15	NORTH GRAND CHENIER MARSH CREATION	48	GD08 LATERAL 27
39	GD4-4	103	GD4-67	16	ROCKEFELLER REFUGE 107 ACRE MARSH CREATION	49	GD08 LATERAL 28
40	GD4B-1	104	GD4-68	17	WILLOW LAKE MARSH CREATION	50	GD08 LATERAL 29
41	GD4-5	105	GD4-69		OYSTER REEF PRESERVATION	51	GD08 LATERAL 30
42	GD4-6	106	GD4-70	1	SABINE LAKE OYSTER REEF	52	GD08 LATERAL 31
43	GD4-7	107	GD4-71	2	CALCASIEU LAKE OYSTER	53	GD08 LATERAL 32
44	GD4-8	108	GD4-72		SHORELINE/EMBANKMENT MAINT.	54	GD08 LATERAL 33
45	GD4-9	109	GD4-73	1	SABINE LAKE BANK MAINTENANCE	55	NORTH CANAL
46	GD4-10	110	GD4-74	2	BANKLINE PROTECTION OF THE GIWW	56	COUTHUSE PUMP LATERAL
47	GD4-11	111	GD5-1	3	SAND ENHANCEMENT & ROCK BREAKWATERS	57	W-1 WEST LATERAL
48	GD4-12	112	GD5-2	4	BLACK LAKE LEVEE MAINTENANCE	58	HIGH ISLAND DRAINAGE LATERAL
49	GD4-13	113	GD5-3	5	CAMERON CREOLE WATERSHED LEVEE MAINTENANCE	59	CREOLE CANAL
50	GD4-14	114	GD5-4	6	SWEET LAKE IMPOUNDMENT MAINTENANCE	60	KINGS BAYOU
51	GD4-15	115	GD5-5	7	N. CAMERON LEVEE EXTENSION	61	LITTLE CHENIER CANAL
52	GD4-16	116	GD5-6	8	HIGH ISLAND RIDGE RESTORATION	62	LABOVE BAYOU
53	GD4-17	117	GD5-7	9	GD05 SALINITY PROTECTION LEVEE SYSTEM	63	NORTH CREOLE DRAINAGE TRENACES
54	GD4-18	118	GD5-8		CANAL MAINTENANCE	64	OLD MERMINTAU RIVER DRAINAGE OUTLET
55	GD4-19	119	GD5-9	1	SOUTH LINE CANAL MAINTENANCE	65	SWEET LAKE LATERAL A
56	GD4-20	120	GD5-10	2	SWEET LAKE NORTH DITCH	66	JOANEN LATERAL
57	GD4-21	121	GD5-11	3	MCCORD SOUTH DITCH	67	SWEETLAKE LATERAL B
58	GD4-22	122	GD5-12	4	S HEBERTS LANDING DITCH	68	GD04 CHANNEL B
59	GD4-23	123	GD5-13	5	MCCORD NORTH DITCH	69	GD04 CHANNEL C
60	GD4-24	124	GD5-14	6	GD08 LATERAL 1	70	GD04 CHANNEL D
61	GD4-25	125	GD5-15	7	GD08 LATERAL 2	71	GD04 CHANNEL E
62	GD4-26	126	GD5-16	8	GD08 LATERAL 3	72	GD04 CHANNEL F
63	GD4-27	127	GD5-17	9	GD08 LATERAL 4	73	GD04 CHANNEL G
64	GD4-28	128	GD5-18	10	GD08 LATERAL 5	74	SNAKE BAYOU DITCH
						75	NUNEZ STRUCTURE DITCH





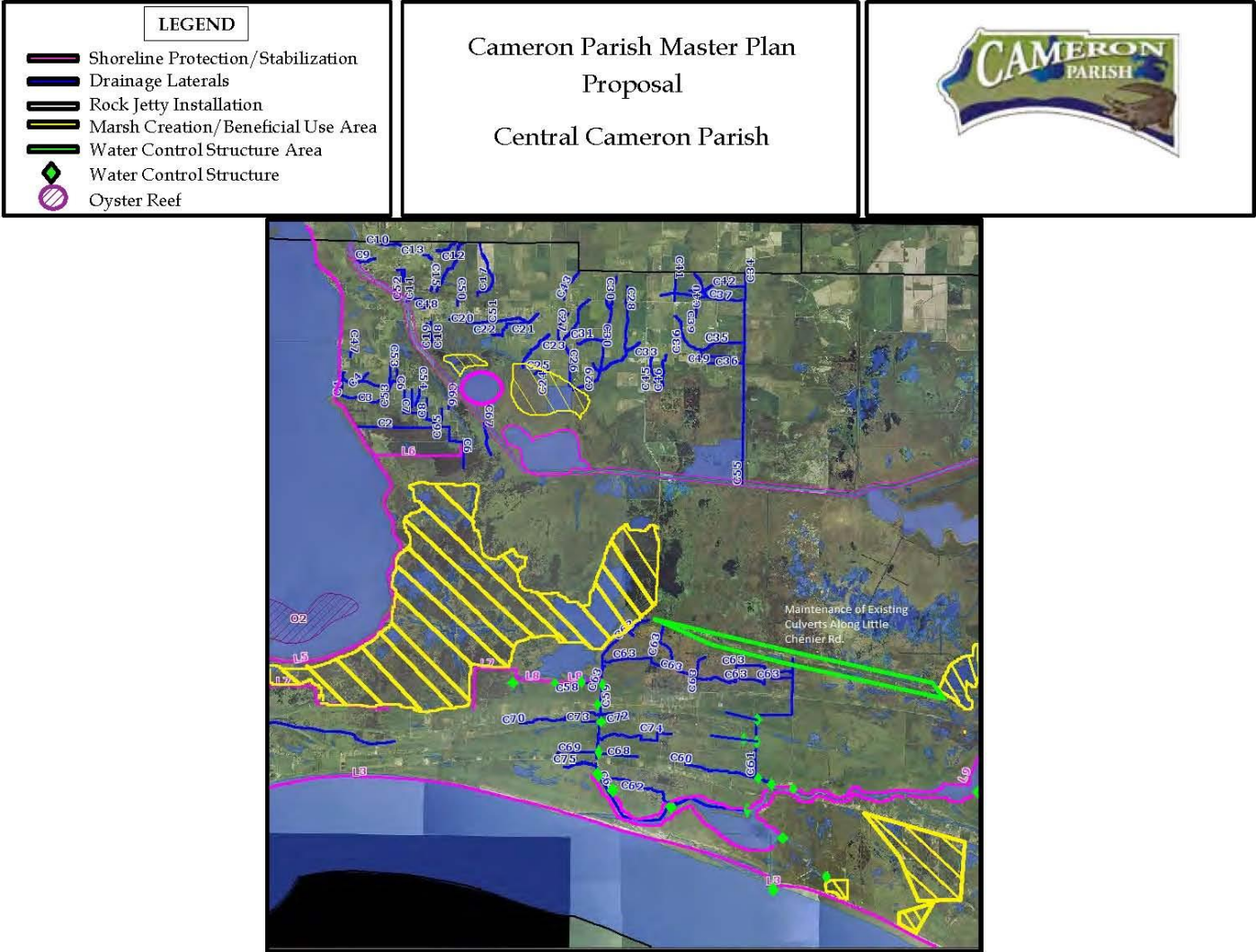
**LEGEND**

- Shoreline Protection/Stabilization
- Drainage Laterals
- Rock Jetty Installation
- Marsh Creation/Beneficial Use Area
- Water Control Structure Area
- Water Control Structure
- Oyster Reef

Cameron Parish Master Plan  
Proposal

Western Cameron Parish







LEGEND

Shoreline Protection/Stabilization

Drainage Laterals

Rock Jetty Installation

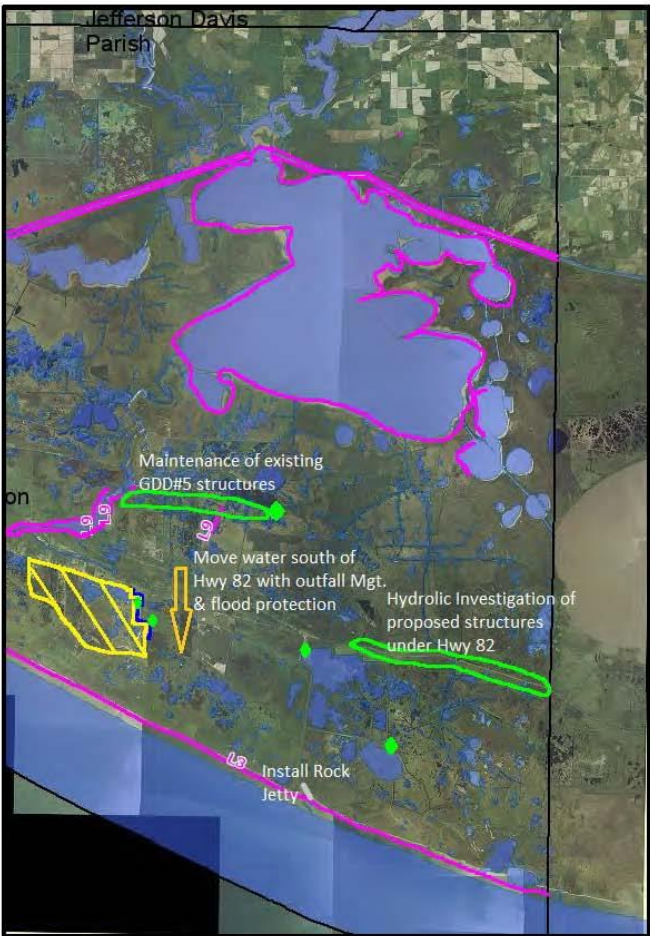
Marsh Creation/Beneficial Use Area

Water Control Structure Area

Water Control Structure

Oyster Reef

Cameron Parish Master Plan  
Proposal  
  
Eastern Cameron Parish





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**VERMILION PARISH PRIORITY ECOSYSTEM RESTORATION PROJECTS**





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